

WHAT IS CLAIMED IS:

1. A method of manufacturing a semiconductor device, comprising the steps of:

forming a first insulation film by oxidizing a surface of a semiconductor substrate using a strongly acidic solution after cleaning the surface of said semiconductor substrate; and

forming a second insulation film embracing said first insulation film by low-temperature processing.

2. The method of manufacturing the semiconductor device according to claim 1,

wherein said second insulation film is formed in an atmosphere containing a radical.

3. The manufacturing method of the semiconductor device according to claim 1,

wherein said second insulation film is formed by plasma oxidation in an atmosphere containing an oxide radical.

4. The method of manufacturing the semiconductor device according to claim 1,

wherein said second insulation film is formed by plasma nitridation in an atmosphere containing a nitride radical.

5. The method of manufacturing the semiconductor device according to claim 1,

wherein said second insulation film is formed as an ONO film.

6. The method of manufacturing the semiconductor device according to claim 1,

wherein said strongly acidic solution is a solution containing nitric acid.

7. The method of manufacturing the semiconductor device according to claim 6,

wherein said solution containing the nitride acid is 70°C or higher in temperature.

8. The method of manufacturing the semiconductor device according to claim 1,

wherein said strongly acidic solution is a solution containing ozone.

9. The method of manufacturing the semiconductor device according to claim 1,

wherein said low-temperature processing is conducted at a temperature of 650°C or lower.

10. The method of manufacturing the semiconductor device according to claim 1,

wherein said first insulation film has a film thickness of 1 nm or more.

11. The method of manufacturing the semiconductor device according to claim 1,

wherein said second insulation film is a gate insulation film or a tunnel insulation film.

12. The method of manufacturing the semiconductor device according to claim 2,

wherein said strongly acidic solution is a solution containing nitric acid.

13. The method of manufacturing the semiconductor device according to claim 3, wherein said strongly acidic solution is a solution containing nitric acid.

14. The method of manufacturing the semiconductor device according to claim 2, wherein said strongly acidic solution is a solution containing ozone.

15. The method of manufacturing the semiconductor device according to claim 3, wherein said strongly acidic solution is a solution containing ozone.

16. The method of manufacturing the semiconductor device according to claim 2, wherein said low-temperature processing is conducted at a temperature of 650°C or lower.

17. The method of manufacturing the semiconductor device according to claim 2, wherein said second insulation film is a gate insulation film or a tunnel insulation film.

18. The method of manufacturing the semiconductor device according to claim 3, wherein said second insulation film is a gate insulation film or a tunnel insulation film.